

## **REMARKS**

### **Information Disclosure Statement**

The Search Report has not been considered. A new IDS including the references listed in the Search Report will be submitted in due course.

### **Claim Rejections – 35 U.S.C. §102**

Claims 7-12 have been rejected under 35 U.S.C. §102(b) as being anticipated by Jax et al., “Wideband Extension of Telephone Speech Using a Hidden Markov Model.” The rejection is respectfully traversed.

The invention relates to a communication terminal having a bandwidth expansion device for expansion of a bandwidth of a narrowband speech signal at its low-frequency and/or high-frequency end by synthesis of at least one frequency band on the basis of the narrowband speech signal. Here, bandwidth expansion can be performed even when using two or more net bit rates for the narrow band speech signal. In this regard, the bandwidth expansion device is connected to a memory in which a reference table is stored, the reference table including at least one parameter value for the bandwidth expansion for at least two net bit rates of the narrowband speech signal. More specifically, on the network side, a processor 3 in the mobile communication terminal, received information on the net bit rate that is currently to be used for the link between the two mobile communication terminals. Depending on this information, the processor 3 accesses a memory 4 in which a reference table is stored, including all possible net bit rates for the speech coder 2 and includes associate values for at least the parameters for bandwidth expansion, which is performed by the bandwidth expansion device 5.

Jax discloses an algorithm to recover wideband speech from lowpass-bandlimited speech. The narrowband input signal is classified into a number of speech sounds for which the information about the wideband spectral envelope is taken from a pre-trained codebook. The algorithm uses only a single wideband codebook.

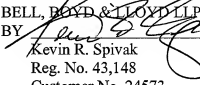
The Examiner cites paragraph 3 of the “Introduction” in the Jax reference as disclosing a memory unit that stores a reference table that includes at least one parameter value for the bandwidth expansion for at least two net bit rates of the narrowband speech signal. Applicant respectfully disagrees. Here, Jax discloses extrapolation of the missing low and high frequency

components of a speech signal at the receiving side of the transmission link utilizing the band-limited speech only. Parameters of a wideband source model can be estimated from the band-limited speech. These parameters are used in combination with the source model to estimate and add the missing frequencies. Using the algorithm, the narrowband input signal and a pre-trained codebook, an estimate of the wideband spectral envelope of the current speech frame is calculated. Auto-regressive (AR) filter coefficients  $\hat{C}$  describing this spectral envelope are then taken from the codebook, and used in an FIR filter to estimate the narrowband excitation signal (see, third paragraph, section 2 and first paragraph, section 3).

As described in Jax, the reference fails to disclose a table includes at least one parameter value for the bandwidth expansion for at least two net bit rates. Rather, as stated, an AR filter coefficient  $\hat{C}$  describing the spectral envelope is used. Significantly, in the invention, bandwidth expansion can be performed even when using two or more net bit rates for the narrowband speech signal, by storing values suitable for the respectively used net bit rates for parameters which govern the quality of the bandwidth expansion. That is, the optimum configuration for the bandwidth expansion is dependent on which net bit rate is currently being used by a speech coder on which the received narrowband speech signal is based.

In view of the above, Applicants submit that this application is in condition for allowance. An indication of the same is solicited. The Commissioner is hereby authorized to charge deposit account 02-1818 for any fees which are due and owing, referencing Attorney Docket No. 119065-031.

Respectfully submitted,

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